A critical appraisal of "The effect of taping versus semi-rigid bracing on patient outcome and satisfaction in ankle sprains: a prospective, randomized controlled trial"

By

Tyler Van Bastian, SPT

In partial fulfillment of the

requirements for the course:

PT 7240 Evidence-Based Practice in Physical Therapy

Department of Physical Therapy

Angelo State University

Member, Texas Tech University System

November, 2017

Abstract

The following critical appraisal looks at the strengths and weaknesses of the research articles introduction, methods, results and discussion. The appraisal further considers the clinical relevance of the research conducted and how it can be applied in the clinic with future patients/clients. It is also an intervention that has not been researched regarding measuring patient satisfaction and functional outcomes comparing the bracing and taping group.

Key words

Ankle sprain, brace, tape, functional outcome, patient satisfaction

Introduction

The purpose of the critical appraisal is to fulfill the requirements for a class assignment PT 7240, as well as look at the strengths and weaknesses of a research article. Evidence based practice is critical in the profession of Physical Therapy and it is very important to evaluate an article for reliability and validity before applying the potential intervention with patients. This article is looking to compare the effectiveness of bracing versus taping on patient satisfaction and functional outcomes with the focus being on young adults. The clinical question being addressed is "In people with previous ankle injuries or weakness, does taping, bracing or mid to high rise cleats provide the best support for protecting against new or recurring ankle injuries/weakness?"

Methods

The main database that was used to search for relevant articles was PubMed because it provided full, free text articles as well as a lot of hits. Some of the key terms used when searching on PubMed were as follows; Ankle injury, brace, taping, high rise shoes and prevention. One limitation that was placed on the search criteria was that no systematic reviews or reviews of any sort were used because experimental articles were the most effective in answering the clinical question. An article was included if it compared at least two of the methods of injury prevention because most articles did not compare all three forms of external support. An article was excluded if it was done more than 20 years ago because it was deemed outdated as there have been newer studies done more recently. Article's were also excluded if it only covered one of the forms of external support because the clinical question is wanting to compare the various forms of external support and if there is only one support, then there would be no comparison to the other forms of support. A third exclusion criterion was that if the study

was done with children under the age of 18 or over the age of 40 because they are usually athletes returning to sports or work. The total hits found with the limitations, inclusion and exclusion criteria was 15.

The article selected was published in the BMC Musculoskeletal Disorders journal in 2012, by Sacha Lardenoye et al. and was conducted in the Netherlands. This article was selected because it comes from a journal that has an impact factor of 2.11, consisted of the largest sample size of all the studies, and compared two of the more popular external supports in taping and bracing.

Results

Summary of the study

Ankle injuries are one of the most common musculoskeletal injuries with a variety of methods and treatment options. This article compares the effectiveness of semi-rigid bracing versus taping on both patient satisfaction and functional outcomes. The study consisted of 100 patients with grade II or III sprains which were randomly assigned to two groups, one with tape and one with a semi-rigid brace. The primary measures were patient satisfaction and skin complications with a secondary measure being ankle function. This took place over four weeks with each group having proprioceptive, range of motion and strength exercises to do at home. The researchers found that the semi-rigid brace was better regarding patient satisfaction as well as less skin complications. The brace group also displayed the same result in functional outcome leading to the finding that semi-rigid braces are the better choice as far as patient comfort.

Appraisal of the study introduction

One of the strengths in the introduction include a comprehensive and thorough explanation of all necessary background information as well as it provides good detail in each aspect of the study. The researchers also included information about the United States to make it more relevant to people from the US even though it was conducted in the Netherlands. Another strength of the article is that the authors used numerous articles to support their statements made in the introduction with some being from the Journal of Sports Medicine and Cochran Database.

One of the weaknesses of the introduction is that the authors did not talk a whole lot about the brace that is being used or the way they taped the ankles. They also included the costs of ankle injuries each year but failed to mention the costs per year in the United States. Another weakness is that the authors used articles that were in their own language, Dutch. This makes it hard for anyone who doesn't know the language to determine if the source is reliable and good.

Appraisal of the study methods

One of the strengths of the article is that they had a large sample size of 100 subjects with only 2 subjects not being able to take part in the study. They also stated how many subjects were loss to follow up, 17. Another strength is that both the physicians and subjects were blinded to their group. Both groups also had very similar demographics and were treated the same way except for the brace or tape. A final strength is that the authors used appropriate statistical analyses.

One of the weaknesses of the articles is that the authors did not state why there was a loss of 17 subjects for the follow up. Another big weakness is that the authors did not explain the intervention very well. It was not clear on what exactly they did for the invention or what exercises they had the subjects do. The authors also do not describe the reliability or validity of the tests that they chose for measurements.

Appraisal of the study results

One of the strengths of the articles is that the authors had two primary outcome measures being subject satisfaction and functional outcomes. Both results were in response to the two methods being measured in the same order presented. Another strength was that their tables were organized and easy to understand, especially figure 1 explaining how the groups were created and who was in each and who was lost from each.

One weakness is that they do have well organized tables and figures, but table one is a little too wordy. It can be cut down to fewer words and numbers to eliminate a large chart full of text.

Appraisal of the study discussion

One of the strengths of the discussion is that the authors went on to further explain their findings instead of just re stating their results. The authors tied their findings in with other literature that were related to their topic but since there were no studies that were measuring the same outcomes that they did. The authors stated the conclusion of their study without over concluding the findings and stated that bracing should be considered when using external supports for treatment.

One weakness of the articles discussion is that the authors did not state whether future studies are needed. Another weakness of the discussion is that some of their literature used to explain different sections throughout their article were older than 20 years as well as a few articles being in another language other than English. The authors did not state any limitations to the study which is another weakness except for when they tied follow up results at week 13 as potentially having misclassification bias.

Discussion

The clinical significance of this study in relation to both PT practice and the clinical question is that they found a better and more comfortable option for patients with previous ankle injuries. With both groups showing the same functional outcome, it went a step further in answering the question in the sense it gives a better comfort choice. Since the study covered two forms of external support, it was relevant to the clinical question because it compared them against one another.

This intervention should be considered and used in the clinic when treating patients with ankle sprains. The results showed no functional outcome differences between the two groups of taping or bracing but did show a significance in patient satisfaction and comfort. When treating patients, it is important that they are receiving the best possible care possible. With taping patient's ankles and sending them home or for their exercises, the tape can become weakened and lose its functional support. There is also the issue that when the patient does go home and showers, it would be hard to clean around the tape without it starting to peel off. With the brace, a patient can remove it before they shower and then simply put it back on themselves without having to rely on someone else to tape them back up. However, with the ease of a brace regarding cleaning and putting the brace back on, one risk of using the brace is that it is easier to take off and put back on. This could result in patients taking it off because they can and want to for a bit, resulting in possibly further injuring their ankle. Ultimately, most patients would not have as much of an urge to take the brace off versus the tape because the brace is much more comfortable. One thing that could really improve the argument for using this intervention would be laying out the cost of a onetime purchase of a brace versus the re occurring purchases of tape and pre-wrap.

The article is valid and is trustable in considering this evidence for use for future patients/clients. The primary outcome measures were patient satisfaction as well as functional outcome and of the 81 patients who completed the study, both groups had the same functional outcome with

patient satisfaction being higher in the brace group. If patients/clients were made aware of the effectiveness of bracing over taping, it would be easier on both the patient and the PT in the long run because no tape will have to be applied. This would be both safe and easy to apply in a clinical setting as well because neither the patient or PT needs to spend time taping. The brace can be applied safely and quickly with the same accuracy every time whereas the tape may be different each time. For those reasons, implementing the brace into the patients exercises and at home/everyday activities would be beneficial for both parties.

In conclusion, the article being critically appraised is a good one without many glaring weaknesses with quite a few strengths in every aspect. It is an intervention that can and should be applied in a clinical setting with patients. It is also a safe intervention for not only grade II and III sprains which was included in this study, but it could be beneficial and safe for grade I sprains as well. More future studies could be conducted to further strengthen the findings of this article as well.